

# Perceived Parental Rearing and Conflict Management: Sex Differences and Sex Roles

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## Abstract

Conflict management is an interdisciplinary topic in psychology. Scientific research mostly focuses on variables connected to assertive and cooperative behavior, while applied fields emphasize education and techniques of above mentioned behaviors. Several studies reported on biological sex, sex roles and perceived parental rearing to having an effect on individual differences in conflict management strategies. The aim of the study was to reveal how biological sex, sex roles and perceived parenting effected preferred conflict management strategies. We measured sex roles with BSRI, and perceived parental rearing behavior with EMBU and conflict management strategies with the Thomas-Kilman Instrument. The study included sample consisting of 125 university students in which there are 65 female and 60 male, respectively. In addition, the data were statistically analyzed. We found that (1) while dimensions of conflict management (i.e. assertiveness and cooperativeness) were independent of biological sex, more feminine individuals were more cooperative and more masculine individuals were more assertive. (2) Childhood socialization effected the formation of sex roles and conflict management style as well: subjects reporting higher parental rejection were more masculine and more assertive, while individuals reporting higher parental emotional warmth were more feminine and more cooperative. (3) When running partial correlation between dimensions of conflict management and perceived parental rearing controlled for sex roles, correlations disappeared. Because previous studies showed correlation between sex role identity and prenatal gonadal hormones (as indicated by 2D:4D digit ratio), we explain our results from a bio-psychological perspective. In this article, we present two alternative models that account for the connection between masculine sex role induced by higher levels of testosterone: assertive conflict management and rejecting, cold parental caregiving.

## Keywords

*Assertiveness; Cooperativeness; Perceived Parenting; Sex Role; Sex Hormones*

## Introduction

### *Conflict, Cooperativeness, Assertiveness*

Psychologists have been interested in research on conflict for a long time (Deutsch, 1973). This topic is usually viewed from two different points. On the one hand, research has tried to describe interpersonal conflicts and form a model that is able to reveal the psychological and behavioral background of this phenomenon. On the other hand, applied psychology has focused on individual differences in conflict management and the development and facilitation of these interpersonal skills. Nevertheless, conflict management is so deeply rooted in our everyday lives that the previously presented approaches are hardly kept apart (De Dreu & Gelfand, 2008).

Studies on interpersonal conflict have revealed two main dimensions of conflict management: (1) competition or assertiveness, and (2) cooperativeness (Schneider, Benenson, Fülöp, Berkics & Sándor, 2011). Psychological analyses of competition and cooperation (Fülöp, 2004) suggest that these dimensions are no longer considered as mutually exclusive modes of conflict resolution. They are rather considered as possible ingredients for mixed strategies.

### *Sex differences, Sex roles, Sex Hormones*

Psychological differences between men and women can have biological or environmental, interpersonal causes. Which one is emphasized is a function of whether sex differences are discussed from a biological perspective (sex differences) or in connection to sex role socialization (differences in sex role identity).

Research has revealed a few individual differences in conflict management (Holt & Devore, 2005). Intra- and

intersexual differences can be traced back at least in part to individual differences in sex role identity. Social constructivist theories claim sex roles to be formed during socialization. This process is determined in part by biological sex and expectations on what is considered as masculine or feminine by the surrounding culture. From the point of sexual socialization, sex roles are formed via social learning. Individuals (born as male or female in terms of biological sex) learn fast which are the socially accepted behaviors, attitudes and beliefs for men and women, and start to behave accordingly (Doyle & Paludi, 1998). According to this approach, conflict management strategies that best fit social norms on sex-congruent behavior will be used (Stockard & Lach, 1989).

In a cross-cultural study, Gneezy, Leonard & List (2009) found that culture could play an important role in establishing sex differences in competitive behavior. Two distinct societies were investigated: the patriarchal tribe of Maasai living on the steppe of Tanzania in East-Africa and the matrilineal society of Khasi living in India. Women living in the patriarchal society were less competitive than men (such as women living in Western societies), whereas women living in a matrilineal culture were more competitive than men of the same society. Compared to each other, Khasi women were found to be as competitive as Maasai men.

Evolutionary psychology and behavioral genetics explain individual behavioral differences in terms of genetic factors (Buss, 1994; Plomin, 2001). According to this paradigm, sex differences evolved during phylogenesis because the evolutionary pressures were different from men and women facing the basic challenges of survival and reproduction.

The Challenge Hypothesis (Archer, 2006; Wingfield et al. 1999) - used originally to explain the connection between testosterone and aggressive behavior in monogamous birds - suggests that testosterone level in males increases during the mating period, which supports physiological processes connected to reproduction. During the challenge period, dominant, territorial and mate-retaining behavior of males is induced by elevated levels of testosterone (Wingfield, Hegner, Dufty & Ball, 1990). Concentration of serum testosterone decreases after the mating period in males of species characterized by paternal investment in the

rearing of offspring. At the same time, artificial enhancement of serum testosterone in monogamous swallows is reported to result in polygamous mating (Archer, 2006) since the male sex hormone suppresses paternal behavior and increases mating and aggressive activity. Several studies show evidence that the Challenge Hypothesis can explain aggressive and mating behavior in vertebrates including primates (Muller & Wrangham, 2004). Considering some specific features of our species, the Challenge Hypothesis is also valid for humans (Archer, 2006).

Preferred conflict management styles are not exclusively and unanimously correlated with biological sex, though. In their review, Gayle, Preiss, & Allen (1991) found that men were rather competitive and women were rather ready for compromise, but effect sizes were relatively low. In other conflict management styles (avoidance, accommodation, cooperation), no sex differences were found. If the sample investigated is standardized in a variable distinct from sex, no sex differences can be measured in preferred conflict management strategies (Sorenson & Hawkins, 1995). Korabik, Baril & Watson (1993) found that male and female managers did not differ from each other in preferred conflict management styles. But compared with a same sex, non-manager control group, preferred conflict management strategies differed significantly for women.

Still, individual preferences of conflict management strategies can be linked to the effects of sex hormones. In a study, women who received testosterone were less willing to take the point of view of their partner into account in a dyadic task requiring agreement (Wright et al. 2012). So, intrasexual differences in conflict management strategies can be derived from individual differences in testosterone level. Dabbs et al. (2001) analyzed the connection between testosterone level and social behavior in a sample of male and female university students. Higher levels of testosterone were found to be predictive of intensive approaching behavior and independent, calm and easy communication. Participants with lower testosterone levels were rated as more friendly, attentive and nervous.

Concentration of serum testosterone can effect the sex role identity of the individual as well. Several studies reported an effect of gonadal steroids on personality traits considered as masculine or feminine (Collaer &

Hines, 1995; Auyeung et al. 2009). Femininity and masculinity scales of self-report sex role measures were correlated with certain personality traits. While men usually reported more assertive and competitive behavior than women, women rated themselves higher than men on traits connected to caring and sociability (Fink, Manning & Neave, 2004). Baucom, Besch & Callahan (1985) found a connection between the hormone levels of adult women and their sex role identity. Lower levels of testosterone were measured in women who identified themselves with rather feminine roles than in women who reported a rather masculine sex role identity.

### *Environmental Effects, Socialization, Evolution*

Complex environmental factors can also effect individuals' conflict management strategies (Cingöz-Ulu & Lalonde, 2007). According to the Theory of Learned Helplessness (Seligman, 1975) permanent, inevitable negative stimuli result in the passivity of the organism. This means giving up on any coping strategy. Negative family climates and parental abuse can be childhood experiences that later result in learned helplessness and depressive symptoms.

The Life-History Theory (Draper & Belsky, 1990) highlights other important aspects of environmental factors. According to this theory, our ancestors were selected during phylogenesis to use diverse behavioral strategies that promoted survival, reproduction and development. The individual's effort to find out optimal solutions to environmental challenges is the premise of this theory. So, solutions in the early phase of development (e.g. increasing one's own survival chances as a function of the quality of parenting) have long-lasting effects on decisions in a later phase (e.g. parents' caregiving can serve as a template for mate choice or one's own parenting behavior). According to the Life-History Theory, individuals evaluate environmental conditions and make adaptive decisions whether time, energy and resources should be invested in physical development or reproductive efforts.

According to the Evolutionary Model of Socialization (Belsky, Steinberg & Draper, 1991), individuals are considered as flexible decision makers who decide, at every point of their lives, how to maximize chance for survival and reproduction. Decisions are made via the ecological harmonization of the factors of internal and

external environment. Individuals prefer behaviors that are evaluated as the most favorable for their genetic fitness and best fitting their social and material environment. Trade offs (Borgerhoff Mulder, 2000) enable individuals to flexibly choose between alternatives. Since resources are limited and reproduction requires high costs, these mechanisms serve to set the optimal form and amount of reproduction (e.g. onset of sexual behavior, preference for long-term vs. short-term relationships) and parental investment (e.g. number of offspring, time elapsed between pregnancies).

Although exact mechanisms of threatening environmental effects resulting in higher levels of testosterone have not been known yet, several studies try to reveal this connection. Josephs et al. (in press) showed that in an experimental setting simulating a stressful event, elevated levels of testosterone could be measured in the blood of participants. Kuzawa, Adair, Lee & Mcdade (2010) reported contradictory results. Biometric data from early childhood and indicators in young adulthood were compared in Philippine men. Men who were raised in richer families and more hygienic households, and who were breast fed by the mother, showed less digestive problems. They reaching puberty earlier, were taller, more muscular and stronger, and had higher levels of testosterone than men who were raised in adverse environments as children. Besides, they reported an earlier onset of sexual behavior and more sexual partners. At the same time, similar connections could not be revealed in women. These results support the idea of sex differences in the effect of early experiences on later development.

### *Aims of the Study, Hypotheses, Predictions*

The aim of our study was to reveal individual differences in correlates of conflict management strategies (in terms of cooperativeness and assertiveness). Variables included biological sex, sex role identity and perceived parental rearing (as an indicator of socialization). Though several former studies focused on sex differences and effects of sex role identity in conflict management strategies, and how early socialization effected it, no extensive theoretical model has discussed the issue yet including all the above listed variables. Our study tried to reveal possible developmental pathways to conflict management strategies in young adulthood using

biological, psychological, and evolutionary theoretical models and empirical findings. Based on the theoretical introduction, the following hypotheses and predictions were drawn.

### ***Sex and Sex Role Differences in Conflict Management***

*Hypothesis 1* Our starting point is the Intra-sexual Selection Theory of Darwinian Sexual Selection (Andersson, 1994; Darwin, 1871). Testosterone-dependent features form the humoral base of males' competition for females in polygynous species. Presented in humans, this will result in sex differences in psychological and behavioral variables such as sex role identity and conflict management.

- *Prediction 1* Sex differences are presumed in preferred conflict management strategies. More precisely, women are expected to be more cooperative and less assertive than men.
- *Prediction 2* Women are presumed to be more feminine and less masculine than men in our sample of university students.
- *Prediction 3* Compared to less masculine individuals, more masculine (i.e. less feminine at the same time) persons are presumed to report higher levels of assertiveness independent of their sex.
- *Prediction 4* Compared to less feminine people, more feminine (i.e. less masculine at the same time) individuals are presumed to report higher levels of cooperativeness independent of their sex.

### ***Perceived Parental Rearing and Sex roles***

*Hypothesis 2* Based on the Evolutionary Model of Socialization (Belsky, Steinberg & Draper, 1991), adverse parental care and environmental distress accelerate the process of sexual maturation. This connection is mediated by gonadal sex hormones, which means that perceived parental rearing should correlate with sex role identity (as an indicator of sex hormone levels).

- *Prediction 5* Participants who report higher levels of parental rejection are presumed to report more masculine sex role identity than those who report less parental refusal.
- *Prediction 6* Participants who report higher levels of parental emotional warmth are presumed to report more feminine sex role identity than those

who report less parental emotional warmth.

### ***Perceived Parental Rearing and Conflict Management***

*Hypothesis 3* Based on the Evolutionary Model of Socialization (Belsky, Steinberg & Draper, 1991), quality of early parenting is presumed to effect the conflict management strategies of young adults.

- *Prediction 7* Individuals who report higher levels of parental rejection are presumed to prefer more assertive conflict management strategies than those who perceive their parents as less rejecting.
- *Prediction 8* Individuals who report higher levels of parental emotional warmth are presumed to prefer more cooperative conflict management strategies than those who perceive their parents as emotionally less warm.
- *Prediction 9* Sex role identity is presumed to play a mediating role between early childhood experiences (measured by perceived parental rearing) and actual conflict management strategies. More precisely, significant correlation between perceived parenting and conflict management strategies doesn't exist any more if effects of sex role identity are controlled for.

## **Study**

### ***Participants***

Our original sample consisted of 143 university students from different faculties of the University of Pécs. Eighteen participants were excluded because of missing data. So in statistical analyses, data from 125 people (age = 20.65±1.55 years) were used. The sample consisted of 65 female (age = 20.00±1.11 years) and 60 male (age = 21.53±1.66 years) students. Participation was voluntary and anonymous. Participants had the possibility to retreat at any point.

### ***Method and Measures***

Participants received a printed booklet with the measures and instructions. Pairs of statements belonging to the Thomas-Kilman Conflict Mode Instrument were projected on a screen and participants reported their choices on an answer sheet.

### ***Measuring conflict management strategies***

Preferred conflict management strategies were measured by the Thomas-Kilman Conflict Mode Instrument (TKI) (Thomas & Kilmann, 1974; 2007).

$$\text{ASSERTIVENESS} = (\text{Competing} - \text{Avoiding}) + (\text{Collaborating} - \text{Accommodating})$$

$$\text{COOPERATIVENESS} = (\text{Collaborating} - \text{Competing}) + (\text{Accommodating} - \text{Avoiding})$$

FIGURE 1 FORMULA FOR COMPUTING ASSERTIVENESS AND COOPERATIVENESS BASED ON TKI

Theoretically, it measures two dimensions of conflict management: (1) assertiveness refers to the willingness of the individual to pursue their own goals; and (2) cooperativeness refers to the individual's efforts to let or even help others reach their aims. In practice, TKI originally reveals five different modes of conflict management: competition, accommodation, compromise, avoidance and collaboration. Since we were interested in the dimensions of assertiveness and cooperativeness, data were reduced to these dimensions using the formula presented in Figure 1.

### *Measuring Sex Roles*

Sex role identity was measured by the Bem Sex Role Inventory (BSRI) (Bem, 1974; Bem, 1981) that consisted of 60 adjectives (20 referring to masculine, 20 to feminine and 20 to sex role independent traits). Participants were asked to rate how much these adjectives describe them on a 7-point Likert-scale (1 = never true; 7 = always true). In our analysis, the masculinity score was subtracted from femininity score. This resulted in a single masculinity-femininity index, where lower scores refer to a more masculine sex role identity, and higher scores refer to a more feminine sex role identity. This method of data reduction has been found in other studies (Csathó et al., 2003) and has been suggested by Bem (1981) herself.

### *Measuring Perceived Parental Rearing Behavior*

Early experiences with parents as a factor of environmental and societal effects were measured by My Memories of Upbringing Inventory (EMBU - Egna Minnen Beträffande Uppfostran) (Arriandell et al., 1999). The measure contains 23 items that refer both to mother and father and measure three dimensions of perceived parental rearing behavior: (1) Emotional Warmth; (2) Rejection; and (3) Protection.

### *Statistical Analysis*

Statistical analyses were run on the SPSS 17.0 for Windows program package. Sex differences and differences between the more masculine and the more

feminine halves of the sample were tested with independent sample t-tests. Connections between conflict management dimensions, masculinity-femininity index and perceived parental rearing were tested with Pearson's linear correlation. The possible mediating effect of sex role identity between conflict management and perceived parental rearing was tested with partial correlation controlled for Bem's masculinity-femininity index.

### *Results*

#### *Sex and Sex Roles Differences in the Dimensions of Conflict Management*

Sex differences in cooperativeness and assertiveness were tested with independent sample t-tests. No significant difference was found ( $t(123) = -1.37$ ;  $p > 0.05$ ; n.s.) between mean cooperativeness scores for women ( $0.64 \pm 5.37$ ) and men ( $-0.68 \pm 5.52$ ). No sex differences were found in mean assertiveness scores either (for men  $0.52 \pm 7.94$ ; for women  $0.09 \pm 6.96$ ;  $t(123) = 0.318$ ;  $p > 0.05$ ; n.s.).

Next, we split our sample into two nearest-to-equal groups based on Bem's masculinity-femininity index scores. So cooperativeness and assertiveness scores of the more masculine ( $n=63$ ) and the more feminine ( $n=62$ ) halves of the sample could be compared using independent sample t-tests. The more feminine half of the sample reported significantly higher cooperativeness scores ( $1.90 \pm 4.86$ ) than the more masculine half ( $-1.86 \pm 5.41$ ;  $t(123) = -4.086$ ;  $p < 0.001$ ). On the dimension of assertiveness, the more masculine half reported significantly higher scores ( $3.60 \pm 7.48$ ) than the more feminine half ( $-3.06 \pm 5.68$ ;  $t(115.557) = 5.618$ ;  $p < .001$ ).

To further refine the results and to test Prediction 2, sex differences in Bem's masculinity-femininity index were tested with an independent sample t-test. Women ( $19.49 \pm 20.60$ ) were found to be significantly more feminine than men ( $-0.23 \pm 20.06$ ;  $t(123) = -5.416$ ;  $p < 0.001$ ).

TABLE 1. CORRELATIONS BETWEEN COOPERATIVENESS, ASSERTIVENESS, MASCULINITY-FEMININITY (BEM) INDEX AND PERCEIVED PARENTAL REARING. THE HIGHER BEM INDEX REFERS TO THE MORE FEMININE, WHILE THE LOWER BEM INDEX TO THE MORE MASCULINE SEX ROLE IDENTITY.

	Assertiveness	Paternal Rejection	Maternal Rejection	Paternal Emotional Warmth	Maternal Emotional Warmth	Paternal Protection	Maternal Protection	Bem index
Pearson's Correlation	- 0.398**	- 0.128	- 0.118	0.130	0.090	0.034	0.062	0.510**
Sig.	0.000	0.156	0.189	0.148	0.320	0.705	0.492	0.000
Pearson's Correlation	-	0.235**	0.205*	- 0.186*	- 0.107	0.000	- 0.029	- 0.574**
Sig.	-	0.008	0.022	0.038	0.233	1.000	0.748	0.000
Pearson's Correlation	-	- 0.300**	- 0.265**	0.274**	0.230**	0.046	0.030	-
Sig.	-	0.001	0.003	0.002	0.010	0.610	0.737	-

Note: \*:  $p < 0.05$ ; \*\*:  $p < 0.01$

### *Correlations of Perceived Parental Rearing, Conflict Management, and Sex Roles*

Connections among the three groups of variables were tested with Pearson's linear correlation. Results are presented in Table 1.

Higher levels of both paternal and maternal rejection and lower levels of paternal emotional warmth resulted in higher levels of assertiveness. Lower levels of both paternal and maternal rejection and higher levels of both paternal and maternal emotional warmth resulted in higher masculinity-femininity index (i.e. a more feminine sex role identity). More feminine sex role identity resulted in higher cooperativeness and lower assertiveness scores.

### *The Possible Mediating Role of Sex Role Identity between Perceived Parental Rearing and Conflict Management Strategies*

The possible mediating role of sex role identity between perceived parental rearing and conflict management strategies was tested with partial correlation. Correlation between perceived parental rearing and conflict management strategies was controlled for Bem's masculinity-femininity index. Results are shown in Table 2. Relevant cells are highlighted.

Partial correlations revealed that correlations between parental rejection, paternal emotional warmth and assertiveness disappear if controlled for Bem's

masculinity-femininity index. The possible mediating role of sex role identity is discussed in the next section.

### *Discussion*

In our study, possible developmental pathways of preferred conflict management strategies (cooperativeness, assertiveness) have been outlined. Preferred conflict management strategies were proposed as dependent variables, and biological sex, sex role identity and perceived parental rearing were introduced as independent variables. Predictions - except for Prediction 1 - were confirmed. Results are considered as indirect evidence and two possible pathways are proposed regarding the roles of early experience and sex hormones in the development of conflict management strategies.

In analyzing the effects of sex and sex roles, we found that cooperativeness and assertiveness are independent of sex. It means that men are no more assertive, nor are women more cooperative than members of the opposite sex (disconfirmed Prediction 1). Although disconfirmed, results concerning lack of sex differences in conflict management strategies are plausibly explicable with certain characteristics our sample. Our sample consisted exclusively of university students. This homogeneity might be responsible for the disappearance of sex difference in our study (Sorenson & Hawkins, 1995; Korabik, Baril & Watson 1993). In analyzing sex role identity, sex role

TABLE 2 PARTIAL CORRELATIONS BETWEEN CONFLICT MANAGEMENT DIMENSIONS AND PERCEIVED PARENTAL REARING CONTROLLED FOR BEM'S MASCULINITY-FEMININITY INDEX.

	Paternal Rejection	Maternal Rejection	Paternal Emotional Warmth	Maternal Emotional Warmth	Paternal Protection	Maternal Protection	Cooperativeness
Pearson's Correlation	0.031	0.020	-0.012	-0.033	0.012	0.054	-
Sig.	0.732	0.823	0.897	0.713	0.891	0.550	-
Pearson's Correlation	0.081	0.067	-0.036	0.031	0.032	-0.014	-0.149
Sig.	0.374	0.459	0.693	0.730	0.722	0.876	0.100

Note: \*.  $p < 0.05$ ; \*\*.  $p < 0.01$

identity was found to be dependent on sex. Men reported more masculine, while women reported more feminine sex role identity than the opposite sex (Prediction 2). Conflict management was found to be correlated with sex role identity. Independent of their sex, participants who reported a more masculine sex role identity preferred more assertiveness in conflict management than participants who reported a more feminine sex role identity (Prediction 3). On the other hand, participants who reported a more feminine sex role identity were found to report more cooperativeness than participants who reported a more masculine sex role identity (Prediction 4).

In connection with perceived parental rearing, participants who perceived their parents' rearing behavior as more adverse (i.e. more paternal and maternal rejection and less paternal and maternal emotional warmth) reported a more masculine sex role identity than those who perceived their early childhood as more favorable (Predictions 5 and 6).

In analyzing connections between conflict management and perceived parental rearing, assertiveness proved to be correlated with perceived parental rearing. Participants who remembered both their parents as more rejecting and their father as less emotionally warm reported higher levels of assertiveness than participants who perceived their parents' rearing habits as more favorable on the same scales (Predictions 7 and 8). At the same time, further analysis of the connection revealed that controlling for sex role identity in a partial correlation extinguishes connection between perceived parental rearing and conflict management strategies. Therefore, sex role identity can be regarded as a mediator between

recollections of early experiences and actual decisions in conflict situations (Prediction 9).

Since our results indicate sex role identity as a possible mediator between early experiences and conflict management, an approach to sex role identity distinct from the traditional social constructivist point of view is introduced. In a study by Csathó et al. (2003), second finger to fourth finger ratio (2D:4D ratio) was measured and found to be correlated with Bem's masculinity-femininity index. Csathó et al. (2003) concluded that prenatal gonadal hormones can be important factors of sex role identity development. Women with a more masculine digit ratio reported a more masculine sex role identity. Since the 2D:4D ratio is a reliable indicator of fetal humoral status and is negatively correlated with prenatal testosterone and positively with prenatal estrogen levels, higher levels of fetal testosterone are suggested to result in a more masculine sex role identity.

Similar conclusions were obtained from studies with virilized women because of CAH (congenital adrenal hyperplasia). In women with CAH, lower 2D:4D ratio was measured than that in a control group (Brown, Hines, Fane & Breedlove, 2001). Moreover, women with CAH reported more masculine personality traits than their counterparts in a healthy control group (Collaer & Hines, 1995). Several studies agree that girls with CAH prefer boyish toys in their childhood (Hines, Brook & Conway, 2004). In these cases, pathological functioning leads to elevated levels of fetal testosterone that effects later psychological development (e.g. the development of sex role identity). These results are valid only for women with CAH. Men with or without CAH did not differ from

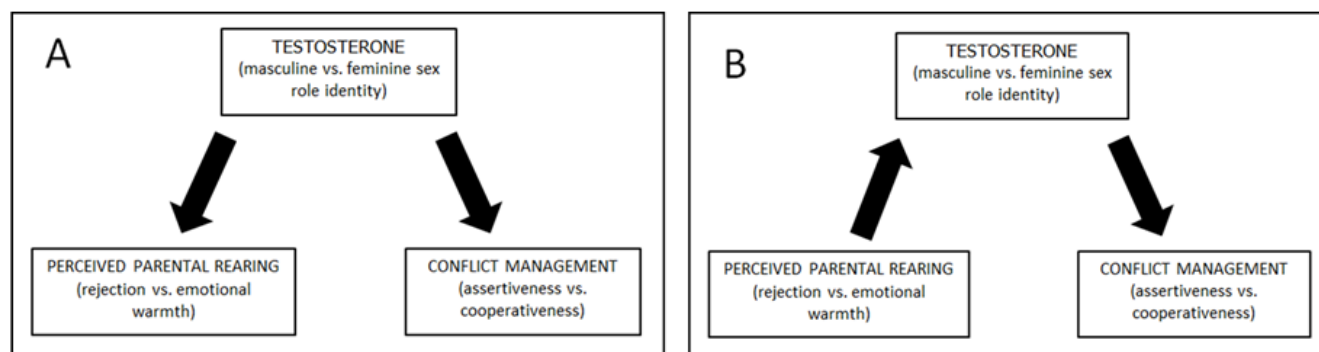


FIGURE 2 TWO POSSIBLE MODELS OF THE CONNECTION BETWEEN CONFLICT MANAGEMENT, PERCEIVED PARENTAL REARING, AND SEX ROLE IDENTITY. THE MODELS ARE BASED ON OUR EMPIRICAL FINDINGS.

each other in childhood toy preferences or sex role identity. If elevated levels of fetal testosterone can have an effect on later (assertive) behavior and sex role identity, it remains an open question on how these effects are mediated and how childhood experiences effect it (Pasterski et al., 2011).

Our results obtained, on the one hand, from Pearson's linear correlations between perceived parental rearing and conflict management and, on the other hand, partial correlations between the same set of variables controlled for Bem's Masculinity-Femininity Index suggest two possible models (Garson, 2012). The first one suggests that inherited levels of prenatal testosterone effect both parental rearing habits and conflict management strategies (Figure 2.A). Infants with higher levels of testosterone are difficult in temperament since their needs are hard to realize. They are hard to soothe; and parents' feelings of competence may decrease. Strong & Dabbs (2000) found in a study with 3 to 8 and 9 to 12 year old healthy children (both boys and girls) that parents perceived children with higher testosterone levels as less attached, more independent and antisocial. It can be interpreted from our results that a more masculine behavior (that later turns into a more masculine sex role identity) leads to both less favorable parental rearing and more assertive conflict management.

The second model is based on the Evolutionary Model of Socialization (Belsky, Steinberg & Draper, 1991). In this model, humorally effected sex role identity is not a common source, but a mediator between parental rearing and conflict management (Figure 2.B.). This model suggests that a higher level of testosterone is the result of an adaptive reaction to the rejecting and threatening environment. A higher level of testosterone will enable the individual to cope with

this adverse environment through assertive, competitive behavior. The early experience of a neglecting caregiver who didn't respect the needs of the child will lead the individual to the assumption that his needs will be neglected by others as well. Assertive strategy evolves as a mode of defense where the individual tries to reach his goals independent from others. The plausibility of this model is supported by Beaton et al. (2011), who found no correlation between the indicator of prenatal gonadal hormones (2D:4D ratio) and levels of testosterone measured from saliva. It means that effects of testosterone on the organizational level (digit ratio, masculine brain, masculine sex role identity) can be independent from the level of activation (everyday behavior). In turn, this suggests that the testosterone level, as a proximal cause of assertiveness, can be the result of postnatal environmental evaluation.

Our study has several limitations. Since our results were based on self-reports and no testosterone levels were measured, our discussion has been built upon results from relevant studies, and is therefore speculative in nature. Our method (using self-report questionnaires) has not been able to distinguish between the two models presented above. Data is wanting for deciding which factor plays the primary role in the development of conflict management strategies. It is highly plausible that early childhood experiences and the masculinization of the organism are part of a mutually reinforcing process. Assertiveness can be one behavioral variable in this process. Further studies can reveal the answers.

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